

Frosts occurred at Lansing, Ingham county, and Traverse City, Grand Traverse county, on the 7th and 8th; at Ionia, Ionia county, on the 9th; and at Manistique, Schoolcraft county, on the 9th and 24th.

Escanaba: reports from points north of this station state that frosts occurred on the morning of the 7th; on the 8th, the first frost of the season occurred at Escanaba, that date being the earliest at which frost has occurred since the establishment of this station in 1871.

Port Huron: light frost occurred in the surrounding counties on the morning of the 10th. Corn, buckwheat, and vegetables were damaged. No frost occurred on the 10th in the county (Saint Clair), in which Port Huron is situated, but a light frost occurred on the morning of the 24th.

Alpena: frosts occurred on the mornings of the 9th, 10th, and 27th, causing no damage in this vicinity.

Nevada.—Carson City, Ormsby county: frosts occurred on the 20th and 21st.

New Hampshire.—Concord: a heavy frost occurred in the Merrimack valley during the night of the 24th–25th, causing considerable damage to vegetation. At Canaan, Grafton county, the temperature fell to 28°.

Berlin Mills, Coos county: a heavy frost occurred throughout this section on the morning of the 25th, causing considerable damage to crops in the lowlands. Nearly all garden vegetables are reported to have been destroyed.

Plymouth, Grafton county: a heavy frost occurred in this vicinity on the morning of the 25th, killing vines and damaging the corn crop.

New Jersey.—Readington, Hunterdon county: frost was seen on the morning of the 25th within one mile of this place.

Coldwell, Essex county: frost occurred in the lowlands on the 25th, causing no damage.

New York.—Rochester: a heavy frost, the first of this season, occurred on the morning of the 25th. Considerable damage was done to crops in this part of the state.

Albany: frost occurred at Berne, Albany county, on the morning of the 25th, vegetables were slightly injured.

Lyons, Wayne county: a heavy frost occurred throughout this section during the night of the 24–25th, causing a large amount of damage. The corn crop in Wayne county was almost entirely ruined, and it is estimated that about three-fourths of the buckwheat crop were destroyed. Hundreds of acres of peppermint were completely destroyed. In the eastern part of this county the tobacco crop was also injured.

Factoryville, Tioga county: the frost of the 25th killed buckwheat and other vegetation. A heavy fog protected the crops in the valleys.

Flushing, L. I., August 25th: farmers along the north shore of the island report a heavy frost last night, which has injured corn, cabbage, and potatoes to a considerable extent.

Montgomery, Orange county: there was a heavy frost in this section on the morning of the 25th. At Monticello, Sullivan county, the frost was also severe, and caused damage to vegetation.

Frosts also occurred at Le Roy, Genesee county, on the 24th; at North Volney, Oswego county; Ithaca, Tompkins county, and at Menand Station (near Albany), on the 25th; and at Cooperstown, Otsego county, on the 15th, 21st, and 30th.

Ohio.—Jacksonborough, Butler county: frost occurred on the 15th; minimum temperature, 44°.

Pennsylvania.—Blooming Grove, Pike county: frost occurred on the morning of the 25th.

Dyberry, Wayne county: the corn and buckwheat crops in the lowlands of this county were badly damaged by the frost of the 25th.

Erie: light frost is reported to have occurred near this place on the morning of the 25th.

Frost also occurred on the 25th at the following places in this state: Catawissa, Columbia county; Wellsborough, Tioga county; Quakertown, Bucks county; and Drifton, Luzerne county.

Vermont.—Chester, Windsor county: frost occurred on the morning of the 25th, causing considerable damage to crops.

Waterbury, Washington county: corn on the highlands in this county was damaged by the frost on the morning of the 25th. In the vicinity of Bennington, Bennington county, the fields of buckwheat were, in many places, entirely ruined.

Lunenburg, Essex county: the frost of the 25th killed the corn, beans, and other vegetables in the low lands.

Strafford, Orange county: a heavy frost occurred on the 25th, killing vines, etc.

Dorset, Bennington county: the frost which occurred during the night of the 24–25th caused slight damage to corn.

Frosts also occurred on the above date at Newport, Orleans county, and at Woodstock, Windsor county.

PRECIPITATION.

[Expressed in inches and hundredths.]

The distribution of rainfall over the United States and Canada, for August, 1884, as determined by the reports from nearly eight hundred stations, is exhibited on chart iii.

A comparison of the monthly precipitation with the average for August in former years, shows an excess over the northern and middle slopes; extreme northwest; northern part of the upper lake region; upper Mississippi and Missouri valleys; and in New England, the departures being greatest in the extreme northwest. In the lower lake region; Ohio valley and Tennessee; south Atlantic and Gulf states; Rio Grande valley; and southern slope, the precipitation for August is below the average. In the lower lake region, and middle and south Atlantic states, the deficiencies average less than 1.00; while in the other districts named they average from 1.00 to more than 5.00. Along the immediate Gulf coast and in the Rio Grande valley, the monthly rainfall has been very light. At Rio Grande City, Texas, where the average precipitation for the month of August during the last six years is nearly six inches, no rain fell throughout the month, and at Pensacola, Florida, the monthly rainfall was but 2.07, the average for August at that place in the four preceding years being more than 12.00. At New Orleans, Louisiana, there was a deficiency of more than 5.00 as compared with the average for the last thirteen years.

The first column of the following table shows the average precipitation for the month of August in each of the various districts as determined from the Signal Service observations for a series of years; in the second column are given the averages for August, 1884; and the third column shows the excess or deficiency of August, 1884, as compared with the average.

Average precipitation for August, 1884.

Districts.	Average for Aug. Signal-Service observations.		Comparison of Aug., 1884, with the average for several years.
	For several years.	For 1884.	
	Inches.	Inches.	Inches.
New England.....	3.88	5.39	1.51 excess.
Middle Atlantic states.....	4.80	3.86	0.94 deficiency.
South Atlantic states.....	6.38	5.68	0.70 deficiency.
Florida peninsula.....	7.47	5.49	1.98 deficiency.
Eastern Gulf states.....	6.01	2.02	4.01 deficiency.
Western Gulf states.....	3.74	1.96	1.78 deficiency.
Rio Grande valley.....	5.83	0.44	5.19 deficiency.
Tennessee.....	3.80	2.85	0.95 deficiency.
Ohio valley.....	3.49	2.28	1.21 deficiency.
Lower lake region.....	2.83	2.24	0.59 deficiency.
Upper lake region.....	2.85	3.09	0.24 excess.
Extreme northwest.....	2.85	5.03	2.20 excess.
Upper Mississippi valley.....	2.39	2.99	0.60 excess.
Missouri valley.....	2.74	3.25	0.51 excess.
Northern slope.....	1.37	1.73	0.36 excess.
Middle slope.....	2.23	3.29	1.07 excess.
Southern slope.....	3.08	2.96	0.12 deficiency.
Southern plateau.....	2.56	2.35	0.21 deficiency.
Northern plateau.....	0.31	0.19	0.12 deficiency.
North Pacific coast region.....	0.82	0.74	0.08 deficiency.
Middle Pacific coast region.....	0.02	0.01	0.01 deficiency.
South Pacific coast region.....	0.16	0.11	0.05 deficiency.
Mount Washington, N. H.....	7.54	8.63	1.09 excess.
Pike's Peak, Colo.....	4.85	0.25	4.30 deficiency.
Salt Lake City, Utah.....	0.86	0.73	0.13 deficiency.

The rainfall for the middle Atlantic states averaged 0.98 below the normal, it was largely in excess in the vicinity of New York City, and slightly above the average at stations on the New Jersey coast, while in Maryland and Virginia the deficiencies varied from 1.40 at Lynchburg, Virginia, to 3.16, 3.94, and 4.06 at Norfolk, Virginia; Washington, District of Columbia; and Chincoteague, Virginia, respectively. Over the central and southern portions of Ohio and Indiana, the deficiencies exceeded 2.00.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average precipitation for August, 1884. Voluntary observers report the following notes in connection with this subject:

Arkansas.—Lead Hill, Boone county: monthly precipitation, 4.78, is 0.82 below the August average for the two preceding years.

California.—Oakland, Alameda county: the rainfall (0.25), on the 4th, was the first precipitation susceptible of measurement that has occurred at this place in August during the last eleven years.

Salinas, Monterey county: during the morning of the 3d, rain fell to a depth of 0.18, which is the first rainfall that has occurred at this place in August during the last thirteen years.

Connecticut.—Hartford: monthly precipitation, 2.87, is about 3.00 below the August average.

Illinois.—Mattoon, Coles county: monthly precipitation, 2.20, is 0.79 below the August average for the four preceding years.

Anna, Union county: monthly precipitation, 2.65, is 2.01 below the August average for the last nine years.

Riley, McHenry county: monthly precipitation, 2.36, is but 0.03 below the August average for the last twenty-three years; the total rainfall for the summer of 1884, is 11.77, or 0.25 above the summer average for the same period.

Swanwick, Perry county: monthly precipitation, 1.04, is 1.19 below the August average for the last three years.

Collinsville, Madison county: monthly precipitation, 1.82, is 2.23 below the August average.

Sycamore, DeKalb county: monthly precipitation, 3.43, is 1.74 in excess of the August average for the three preceding years.

Indiana.—Wabash, Wabash county: monthly precipitation, 2.18, is 0.83 below the August average for the last eight years.

Logansport, Cass county: monthly precipitation, 1.83, is 3.16 below the August average for the last twenty-five years.

Spiceland, Henry county: monthly precipitation, 0.40, is, with the exception of 0.30 in 1860, the smallest that has occurred in August during the last twenty-five years. In 1860, however, the precipitation for July was nearly 7.00, while in July, 1884, it was but 2.08.

Kansas.—Independence, Montgomery county: monthly precipitation, 5.83, is 3.22 in excess of the August average for a period of twelve years.

Yates Center, Woodson county: monthly precipitation, 1.51, is 0.53 below the August average for the four preceding years.

Wellington, Sumner county: monthly precipitation, 3.44, is 0.88 above the August average for the last six years.

Maine.—Gardiner, Kennebec county: monthly precipitation, 4.22, is 0.45 in excess of the August average for a period of forty-eight years.

Maryland.—Fallston, Harford county: monthly precipitation, 3.00, is 2.05 below the August average for the last twelve years.

Massachusetts.—Worcester, Worcester county: monthly precipitation, 3.72, is 1.12 below the August average for a series of many years.

Missouri.—Saint Louis: monthly precipitation, 1.39, is 2.66 below the August normal.

New Jersey.—South Orange, Essex county: monthly precipi-

itation, 7.23, is 2.00 in excess of the August average for the last fourteen years. The precipitation for the summer of 1884 is 18.40, or 5.28 in excess of the summer average, and is, with the exception of 20.57 for the summer of 1875, the largest for the period of fourteen years.

New York.—Palermo, Oswego county: monthly precipitation, 2.19, is 0.34 below the August average for the last thirty-one years.

North Volney, Oswego county: monthly precipitation, 3.20, is 0.69 above the August average for the last thirteen years. The precipitation for the summer of 1884 is 6.85, or 2.35 below the summer average for thirteen years.

Ohio.—Wauseon, Fulton county: monthly precipitation, 1.12, is 1.81 below the August average for the last twelve years.

Pennsylvania.—Dyberry, Wayne county: monthly precipitation, 3.43, is 0.41 above the August average for the last thirteen years.

Texas.—New Ulm, Austin county: monthly precipitation, 0.21, is 3.03 below the August average for the last thirteen years.

Table of excessive and greatest monthly precipitation—August, 1884.

Station.	Specially heavy.		Largest monthly.	Amount.	Station.	Specially heavy.		Largest monthly.	Amount.
	Date.	Amt.				Date.	Amt.		
Alabama.					Nebraska—Cont'd.				
Clanton.....	3, 4	4.50	7.85		Red Willow.....	18	2.20		
Calera.....	28, 29	2.00			New Hampshire.				
Arkansas.					New Hampshire.....				
Fort Smith.....	14, 15	3.20			Mt. Washington.....	29, 30	3.21	8.63	
Lead Hill.....	21	2.51			Bristol.....	22	3.08	6.50	
Connecticut.					New Jersey.				
New London.....	7	2.32	7.15		South Orange.....	4, 5	2.45	7.23	
Bethel.....	30, 31	2.15	6.20		Caldwell.....	4, 5	3.50	6.50	
New Haven.....	29, 30	2.27			Do.....	29, 30	2.10		
Voluntown.....	21, 22	2.15			Moorestown.....	4, 5	4.06		
Dakota.					Cape May.....	4, 5	2.77		
Webster.....	19	3.54	6.41		Barnegat City.....	7	2.06		
Richardton.....	16, 17	3.40	6.40		New Mexico.				
Delaware.					Fort Stanton.....	23	2.03	6.98	
Del. Breakwater.....	4	2.03			New York.				
Florida.					Fort Columbus.....	4, 5	3.71	8.72	
Sanford.....	16	2.14	11.09		New York City.....	4, 5	3.70	8.50	
Do.....	27, 28	1.94			Do.....	29, 30	2.25		
Saint Augustine.....	30	2.20	10.02		White Plains.....	4, 5	2.10	6.64	
Limona.....	15, 16	2.05	8.82		Do.....	29, 30	3.02		
Cedar Keys.....	5, 6	2.20	8.11		Menand Station.....	21, 22	2.04	6.16	
Mayport.....	5, 6	1.43	6.32		Buffalo.....	28, 29	2.42		
Georgia.					Albany.....	29	2.20		
Way Cross.....	11	3.50	10.12		North Carolina.				
Savannah.....	9, 10	1.95	8.41		Wilmington.....	1	3.11	9.58	
Jenp.....	9, 10	4.15	7.86		Do.....	8	2.65		
Do.....	23, 24	2.08			New-Berne.....	1, 2	3.40	7.38	
Allapaha.....	19	2.02	6.74		Do.....	4, 5	2.03		
Newton.....			6.00		Raleigh.....			7.25	
Angusta.....	7	3.08			Fort Macon.....	1, 2	2.05	6.86	
Albany.....	21, 22	3.05			Kitty Hawk.....	6, 7	3.19	6.58	
Giffin.....	1, 2	2.27			Lumberton.....	1, 2	2.29	5.31	
Illinois.					Do.....	6	2.04		
Peoria.....	27, 28	2.60			Goldsbrough.....	5	3.65		
Iowa.					Lenoir.....	8, 9	2.20		
Cresco.....	2	4.72	8.34		Hatteras.....	6, 7	2.17		
Do.....	19, 20	2.34			Chapel Hill.....	7	2.15		
Fort Madison.....	26, 27	4.50	6.87		Scott's Hill.....	5, 6	2.08		
Logan.....	12	2.80			Pennsylvania.				
Kansas.					Tamaqua.....	21, 22	3.11	7.13	
Sherlock.....	8, 9, 10	5.34	8.20		Philadelphia.....	3, 4	2.85		
Do.....	23, 24	2.08			Blooming Grove.....	4	2.20		
Elk Falls.....	14	2.00	6.00		Rhode Island.				
Independence.....	14	2.46			Point Judith.....	23	1.83	7.51	
Dodge City.....	8, 9	2.42			Narragansett Pier.....	7, 8	2.16	6.60	
Leavenworth.....	24, 25	2.07			Block Island.....	7	2.13	6.41	
Kentucky.					South Carolina.				
Louisville.....	28, 29	2.88			Hardeeville.....	4, 5	3.55	9.34	
Louisiana.					Jacksonborough.....	3	2.00	8.46	
Amite City.....	27	2.50			Do.....	10	2.00		
Massachusetts.					Yemassee.....			6.61	
New Bedford.....	7, 8	2.90	8.41		Charleston.....	6	2.12	6.12	
Fall River.....			6.33		Branchville.....	22, 23	2.98		
Boston.....	6, 7	2.73			Greenwood.....	10	2.35		
Thatcher's Island.....	7, 8	2.20			Blackville.....	22	2.09		
Minnesota.					Cheraw.....	6, 7	2.05		
Chester.....	2	2.99	7.79		Texas.				
Do.....	19	2.20			Fort Davis.....	25, 26	5.55	6.70	
Saint Vincent.....	1, 2	4.58	7.18		Clarksville.....	4	2.82		
Duluth.....	19, 20	2.25	6.92		El Paso.....	25, 26	2.31		
Moorhead.....	18, 19	4.77	6.17		Brownsville.....	26	2.01		
Mississippi.					Vermont.				
Lake.....	1, 2	4.83	6.80		Dorset.....	29	2.12		
Corinth.....	14	2.30			West Virginia.				
Missouri.					Helvetia.....	21	2.60		
Miami.....			6.52		Wisconsin.				
Nebraska.					Embarras.....	2, 3	4.15	7.70	
Omaha.....	12, 13	2.81	7.07		Neillsville.....	19, 20	1.80	6.32	
Do.....	10	2.13			Manitowoc.....	3	2.77		
Fremont.....			6.73		Prairie du Chien.....	19, 20	2.23		
Nebraska City.....			6.73		La Crosse.....	2	2.17		
De Soto.....	12, 13	2.30			Ripon.....	2, 3	2.06		
					Lancaster.....	19, 20	2.04		

Table of smallest monthly precipitation—August, 1884.

Station.	Amt.	Station.	Amt.
<i>Arizona.</i>		<i>Colorado.</i>	
Texas Hill.....	0.00	Pike's Peak.....	0.25
Yuma.....	trace	<i>Dakota.</i>	
Benson.....	0.27	Fort Buford.....	0.25
Tucson.....	0.70	Fort Sully.....	0.72
Maricopa.....	0.86	Fort Bennett.....	0.74
<i>Arkansas.</i>		<i>District of Columbia.</i>	
Springfield.....	0.42	Distributing Reservoir.....	0.83
<i>California.</i>		Receiving Reservoir.....	0.87
Alta.....	0.00	<i>Idaho.</i>	
Anaheim.....	0.00	Lewiston.....	0.09
Aptos.....	0.00	Boise City.....	0.07
Auburn.....	0.00	Coeur d'Alene.....	0.17
Bishop Creek.....	0.00	<i>Indiana.</i>	
Boca.....	0.00	Spiceland.....	0.40
Borden.....	0.00	Indianapolis.....	0.40
Brentwood.....	0.00	Vevay.....	0.54
Brighton.....	0.00	Clinton.....	0.75
Byron.....	0.00	Fort Wayne.....	0.95
Caleazon.....	0.00	<i>Louisiana.</i>	
Caliente.....	0.00	Luling.....	0.86
Calistoga.....	0.00	New Orleans.....	0.87
Cisco.....	0.00	<i>Michigan.</i>	
Delano.....	0.00	Ionia.....	0.55
Daggett.....	0.00	Hillsdale.....	0.02
Davis.....	0.00	Mottville.....	0.70
Dunsmuir.....	0.00	Swartz Creek.....	0.95
Emigrant Gap.....	0.00	<i>Montana.</i>	
Farmington.....	0.00	Helena.....	0.47
Galt.....	0.00	Fort Shaw.....	0.59
Goshen.....	0.00	Poplar River.....	0.08
Indio.....	0.00	Fort Benton.....	0.79
Ione.....	0.00	<i>Nebraska.</i>	
Keene.....	0.00	Fort Robinson.....	1.00
Kingsburg.....	0.00	<i>Nevada.</i>	
Lenore.....	0.00	Beowawe.....	0.00
Martinez.....	0.00	Elko.....	0.00
Marysville.....	0.00	Reno.....	0.00
Merced.....	0.00	Winnemucca.....	0.00
Napa.....	0.00	Fort McDermitt.....	Trace
Needles.....	0.00	Wadsworth.....	0.02
Newhall.....	0.00	Hot Springs.....	0.08
Niles.....	0.00	Battle Mountain.....	0.10
Orland.....	0.00	Golconda.....	0.10
Rocklin.....	0.00	Hawthorne.....	0.10
San Fernando.....	0.00	Tecoma.....	0.10
San Jose.....	0.00	Tonawanda.....	0.13
South Vallejo.....	0.00	Hallock.....	0.14
Spadra.....	0.00	Wells.....	0.17
Stockton.....	0.00	Palisade.....	0.22
Summit.....	0.00	Carlin.....	0.20
Sumner.....	0.00	Otero.....	0.60
Tehama.....	0.00	Carson City.....	0.62
Tulare.....	0.00	<i>New York.</i>	
Turlock.....	0.00	Fort Niagara.....	0.55
Williams.....	0.00	<i>Ohio.</i>	
Willows.....	0.00	College Hill.....	0.70
Woodland.....	0.00	Columbus.....	0.70
Antioch.....	trace	North Lewisburg.....	0.80
Colfax.....	trace	<i>Oregon.</i>	
Mammoth Tank.....	trace	Ashland.....	0.00
Poway.....	trace	Klamath Agency.....	0.00
Red Bluff.....	trace	East Portland.....	0.03
Sacramento.....	trace	Kola.....	0.17
San Mateo.....	trace	Albany.....	0.43
San Diego.....	trace	<i>Texas.</i>	
Hydesville.....	0.02	Rio Grande City.....	0.00
Los Angeles.....	0.02	Austin.....	0.04
Petaluma.....	0.02	New Ulm.....	0.21
Benicia Barracks.....	0.03	Fort Brown.....	0.48
San Francisco.....	0.04	Cleburne.....	0.62
Hollister.....	0.05	Palestine.....	0.66
Menlo Park.....	0.05	Brownsville.....	0.88
Angel Island.....	0.05	<i>Utah.</i>	
Monterey.....	0.07	Blue Creek.....	0.00
Fort Bidwell.....	0.08	Promontory.....	0.00
Pleasanton.....	0.09	Terrace.....	0.05
San Rafael.....	0.09	Ogden.....	0.08
Livermore.....	0.10	Corlume.....	0.30
Mojave.....	0.10	Kelton.....	0.34
Soledad.....	0.10	Nephi.....	0.35
Santa Cruz.....	0.10	Salt Lake City.....	0.73
Tracy.....	0.10	<i>Virginia.</i>	
Gilroy.....	0.11	Snowville.....	0.24
Pajaro.....	0.15	Accotink.....	0.94
Salinas City.....	0.18	<i>Washington Territory.</i>	
Keeler.....	0.20	Pleasant Grove.....	Trace
Tennant.....	0.22	Dayton.....	0.09
Alcatraz Island.....	0.25	Fort Spokane.....	0.20
Colton.....	0.25	Spokane Falls.....	0.54
Oakland.....	0.25	Olympia.....	0.90
Ravenna.....	0.25	<i>Wyoming.</i>	
Cape Mendocino.....	0.32	Fort Bridger.....	0.45
Tehichipi.....	0.64	Fort Fred Steele.....	0.70
Truckee.....	1.00		

Vermont.—Woodstock, Windsor county: monthly precipitation, 2.12, is 0.37 below the August average of the last sixteen years.

Virginia.—Wytheville, Wythe county: monthly precipitation, 1.38, is 2.40 below the August normal.

Variety Mills, Nelson county: monthly precipitation, 2.03, is 1.65 below the August average for the last six years.

West Virginia.—Helvetia, Randolph county: monthly precipitation, 4.30, is 0.36 below August average of the last eight years.

HAIL.

Hail-storms occurred during August in the several states and territories as follows:

Arkansas.—Lead Hill, 27th; Little Rock, 30th.

Arizona.—Fort Bowie, 15th; Prescott, 9th, 18th; Fort Apache, 5th, 11th; Fort Verde, 11th. The hail-storm at Prescott on the 9th caused the destruction of crops in that vicinity.

Colorado.—Pike's Peak, 5th, 10th, 11th, 15th.

Dakota.—Deadwood, 28th. Reports from Grand Forks, Grand Forks county, state that during the night of the 28–29th a hail-storm occurred about two miles from that place on the Minnesota river. The width of the storm was about one mile; more than 1,000 acres of fine wheat were destroyed.

Indian Territory.—Cantonment, 1st; Fort Reno, 1st.

Iowa.—Oskaloosa, 29th.

Kansas.—Salina, 16th.

Kentucky.—Richmond, 22d.

Massachusetts.—Heath, 9th.

Minnesota.—Duluth, 10th; Saint Vincent, 5th, 27th.

Montana.—Fort Custer: a hail storm occurred on the afternoon of the 15th, lasting from 7.35 to 8.05 p. m. Government property at this post was damaged to the extent of \$300, about 1,500 window panes having been broken by the hail stones.

Nebraska.—Nebraska City, 2d; Fort Robinson, 20th.

New Hampshire.—Mount Washington, 26th.

Berlin Mills, Coos county: a violent thunder storm, accompanied by hail, passed over this place at 7 p. m. on the 26th.

New York.—Albany, 26th.

North Carolina.—Highlands, 20th.

Ohio.—Westerville, 21st.

Pennsylvania.—Dyberry, 30th; Chambersburg, 30th; Pittsburg, 16th.

Tennessee.—Austin, 3d; Milan, 29th.

Texas.—Fort Elliott, 4th, 5th; Fort Stockton, 30th.

Virginia.—Wytheville, 28th.

Washington Territory.—Port Angeles, 6th.

SNOW.

Snow fell on the summit of Pike's Peak, Colorado, on the following dates: 2d, 5th to 10th, 12th, 13th, 15th, 19th, 20th, 23d, the total depth of snow for the month amounting to about two inches.

Mr. Frank McClintock, voluntary observer at Grand Junction, Mesa county, Colorado, reports the following: "The last of the snow, visible from this place, on the peaks of the Grand Mesa, disappeared about the 25th. The elevation of the peaks is nearly 10,000 feet above the level of the sea."

Table of rainy and cloudy days, relative humidity, and dew-point for Aug., 1884.

Districts.	Rainy days.	Cloudy days.	Rel. humidity. °	Dew-point.
<i>Percentages.</i>				
New England.....	From 12 to 14	From 4 to 9	From 78.3 to 89.3	From 55.1 to 64.4
Middle Atlantic states.....	6 " 13	5 " 11	66.9 " 85.8	60.2 " 69.6
South Atlantic states.....	8 " 22	1 " 13	70.5 " 87.8	64.2 " 73.0
Florida peninsula.....	15 " 20	1 " 13	72.9 " 80.7	72.8 " 74.1
East Gulf states.....	0 " 11	0 " 4	68.9 " 75.8	67.5 " 71.4
West Gulf states.....	2 " 12	0 " 7	68.8 " 77.5	66.0 " 73.8
Rio Grande valley.....	0 " 4	1 " 2	59.9 " 73.6	67.4 " 71.9
Tennessee.....	4 " 11	2 " 6	68.8 " 79.3	63.2 " 69.9
Ohio valley.....	0 " 9	2 " 4	58.8 " 68.6	50.7 " 62.8
Lower lake region.....	5 " 13	3 " 7	67.1 " 70.7	55.8 " 58.6
Upper lake region.....	8 " 17	1 " 9	68.3 " 77.7	51.4 " 57.7
Extreme northwest.....	0 " 13	2 " 6	59.2 " 81.3	49.4 " 55.6
Upper Mississippi valley.....	4 " 15	1 " 7	60.1 " 74.1	57.5 " 60.1
Missouri valley.....	2 " 11	2 " 5	61.2 " 75.5	53.7 " 61.7
Northern slope.....	2 " 11	2 " 4	43.3 " 69.7	40.5 " 57.8
Middle slope.....	8 " 14	3 " 7	52.7 " 70.9	44.1 " 60.8
Southern slope.....	2 " 19	2 " 4	53.1 " 66.1	54.6 " 64.9
Southern plateau.....	4 " 16	3 " 10	45.2 " 62.5	40.7 " 55.3
Northern plateau.....	1 " 3	0 " 1	41.8 " 50.4	43.0 " 54.5
North Pacific coast region.....	3 " 8	4 " 6	93.9 " 82.9	53.9 " 55.2
Middle Pacific coast region.....	0 " 1	0 " 7	35.2 " 87.3	50.8 " 57.5
South Pacific coast region.....	0 " 0	0 " 1	73.6 " 77.8	60.5 " 61.9
Mt. Washington, N. H.....	Sixteen	Five	90.6	44.9
Pike's Peak, Colo.....	Nine	Four	75.1	28.2
Salt Lake City, Utah.....	Three	Three	34.9	41.4

*Relative humidity corrected for altitude.

COTTON REGION REPORTS.

In the table below are shown the average precipitation and the means of the maximum and minimum temperatures for August, 1884, in the cotton region districts, with the August averages for the two preceding years. From a comparison of these averages it will be seen that in all of the districts, with the exception of that of Charleston, the precipitation was below the average; the deficiencies exceeding three inches in the districts of Atlanta and New Orleans. The means of the minimum temperatures were lower in all districts except for Charleston, while the means of the maximum temperatures do not show any marked departures:

Temperature and rainfall data for the cotton districts, August, 1884.

Districts.	Rainfall.				Temperature.								Extremes for Aug., 1884.	
	Average for Aug. of two preceding years.	Average for Aug., 1884.	Departures.	Maximum.				Minimum.						
				Mean for Aug. of two preceding years.	Mean for Aug., 1884.	Departures.	Mean for Aug. of two preceding years.	Mean for Aug., 1884.	Departures.					
New Orleans.....	5.54	1.93	- 3.61	90.4	92.4	+ 2.0	71.2	69.3	- 1.9	104	96			
Savannah.....	5.52	4.20	- 1.32	90.5	90.4	- 0.1	71.2	69.7	- 1.5	102	93			
Charleston.....	5.59	0.04	+ 5.55	90.2	88.5	- 1.7	68.7	69.1	+ 0.4	98	55			
Atlanta.....	5.51	2.05	- 3.46	87.4	88.0	+ 0.6	67.3	66.6	- 0.7	100	43			
Wilmington.....	4.60	3.75	- 0.85	88.2	88.3	- 0.1	67.6	66.7	- 0.9	99	52			
Memphis.....	3.85	1.70	- 2.09	87.3	89.0	+ 1.7	66.1	64.7	- 1.4	100	45			
Galveston.....	3.17	1.61	- 1.56	94.0	93.9	- 0.1	71.8	66.6	- 5.2	104	47			
Vicksburg.....	3.63	3.33	- 0.30	90.8	90.6	- 0.2	69.7	68.0	- 1.7	100	57			
Montgomery.....	3.58	2.65	- 0.93	90.4	89.8	- 0.6	68.7	66.1	- 2.6	104	52			
Augusta.....	3.70	3.53	- 0.17	89.4	89.7	+ 0.3	68.4	66.1	- 2.3	103	52			
Little Rock.....	3.42	1.54	- 1.88	90.1	90.0	- 0.1	65.4	64.9	- 0.5	104	46			
Mobile.....	3.64	1.68	- 1.96	92.0	92.0	normal	69.4	67.5	- 1.9	106	50			

WINDS.

The most frequent directions of the winds during the month of August, 1884, are shown on chart ii. by arrows flying with the wind. In New England, the prevailing winds were southerly; in the middle Atlantic states they were northeasterly along the coast from Atlantic City, New Jersey, to Norfolk, Virginia, and southerly at the inland stations and at Sandy Hook, New Jersey, and New York City; in the south Atlantic states they were northeasterly; in the lake region, Ohio valley, east Gulf states, and in the north Pacific coast they were variable; in the extreme northwest, upper Mississippi and Missouri valleys, and in the west Gulf states they were mostly from the south.

TOTAL MOVEMENTS OF THE AIR.

[In miles.]

In the following table are given the stations reporting the largest and smallest total movements of the air in each of the various districts:

Districts.	Stations reporting largest.	Miles.	Stations reporting smallest.	Miles.
New England.....	Block Island, R. I.....	7,452	Eastport, Maine.....	3,133
Middle Atlantic states.....	Del. Breakwater, Del.....	9,192	Lynchburg, Va.....	1,820
South Atlantic states.....	Kitty Hawk, N. C.....	10,441	Augusta, Ga.....	2,818
Florida peninsula.....	Key West.....	5,352	Sanford.....	3,209
Eastern Gulf states.....	Pensacola, Fla.....	4,385	Montgomery, Ala.....	2,829
Western Gulf states.....	Indianola, Tex.....	6,610	Little Rock, Ark.....	2,533
Rio Grande valley.....	Bio Grande City, Tex.....	5,392	Brownsville, Tex.....	4,884
Tennessee.....	Nashville.....	3,100	Chattanooga.....	2,798
Ohio valley.....	Louisville, Ky.....	3,745	Cincinnati, Ohio.....	3,165
Lower lake region.....	Sandusky, Ohio.....	7,538	Toledo, Ohio.....	4,754
Upper lake region.....	Grand Haven, Mich.....	7,045	Chicago, Ill.....	4,930
Extreme northwest.....	Fort Totten, Dakota.....	9,828	Bismarck, Dak.....	5,858
Upper Mississippi valley.....	Saint Louis, Mo.....	7,411	Dubuque, Iowa.....	3,278
Missouri valley.....	Huron, Dak.....	7,030	Yankton, Dak.....	3,113
Northern slope.....	Cheyenne, Wyo.....	6,741	Deadwood, Dak.....	2,163
Middle slope.....	Dodge City, Kan.....	8,874	Denver, Colo.....	4,475
Southern slope.....	Fort Stockton, Tex.....	7,140	Fort Concho, Tex.....	6,170
Southern plateau.....	Fort Grant, Ariz.....	3,828	El Paso, Tex.....	1,474
Middle Plateau.....	Salt Lake City, Utah.....	3,492		
Northern plateau.....	Dayton, Wash. T.....	4,320	Lewiston, Idaho.....	987
North Pacific coast region.....	Fort Canby, Wash. T.....	5,503	Olympia, Wash. T.....	1,225
Middle Pacific coast region.....	Cape Mendocino, Cal.....	10,448	Red Bluff, Cal.....	3,492
South Pacific coast region.....	San Diego, Cal.....	4,397	Los Angeles, Cal.....	3,095

The total movements of the air on the summits of Mount Washington, New Hampshire and Pike's Peak, Colorado, were 20,870 and 9,113, respectively.

HIGH WINDS.

On the Summit of Mount Washington, New Hampshire, the following high velocities were registered: 71, nw., 1st; 60, nw., 2d; 52, s., 4th; 50, s., 5th and 6th; 60, n., 15th; 59, sw., 22d; 56, sw., 23d; 80, nw., 24th; 56, nw., 25th; 72, sw., 26th; 64, w., 27th; 88, (maximum), se., 29th.

Other stations reporting high velocities are as follows:

Cape Mendocino, California, 52, se., 2d.

Fort Custer, Montana, 52, nw., 15th.

Pike's Peak, Colorado, 52, w., 20th.

Cape May, New Jersey, 52, s., 22d.

Delaware Breakwater, Delaware, 53, sw., 22d.

Fort Assinaboine, Montana, 48, se., 27th.

Fort Maginnis, Montana, 48, nw., 1st.

Saint Paul, Minnesota, 46, se., 10th.

LOCAL STORMS AND TORNADOES.

California.—San Diego: at about 3 p. m. on the 22d a heavy rain and hail-storm occurred at Riverside, San Bernardino county. The most violent part of the storm was of about thirty minutes duration. About three inches of rain fell, flooding the cellars and submerging the streets. The width of the storm was about three miles, very little rain having fallen at Colton, and none at San Bernardino: some damage was caused by the high wind.

Dakota.—Huron, Beadle county: at 3 p. m. on the 28th a funnel-shaped tornado cloud was observed north of this station moving rapidly in a south-southeasterly direction. Nearly everything within the storm's path, which was from eighty to one hundred yards wide, was destroyed. It passed within three-fourths of a mile of Huron, travelling at an estimated velocity of forty miles per hour. The tornado passed through Beadle, Miner, Hanson, McCook and Hutchinson counties, and resulted in the loss of six lives. The maximum wind velocity at Huron during the passage of the tornado was twenty-three miles per hour.

Mitchell, Davison county: on the afternoon of the 28th, there were three funnel-shaped tornado clouds observed from this place. They were plainly visible and carried sand and dust to a great height into the air. A high wind prevailed at Mitchell, but no damage was done.

Sioux Falls, Minnehaha county: the storm of the 28th caused no damage at this place, but on a farm six miles north, a dwelling and all of the outbuildings were destroyed. A man, who was caught in the storm, was carried high into the air and thrown to the ground and instantly killed. The storm passed four miles west of Sioux Falls, leaving a well-defined path eighty yards in width. Four dwellings, with numerous other buildings, were destroyed, and a number of persons were killed.

Florida.—Jacksonville: a severe thunder storm accompanied by heavy rain prevailed at this place from 6.35 to 7.40 p. m. on the 8th. The storm moved from west to east, and was accompanied by a remarkable electrical display; considerable damage was done by lightning.

Illinois.—Cairo: a thunder storm, passing from northwest to southeast, occurred at 4 p. m. on the 27th. In thirty-seven minutes 1.12 inches of rain fell, and for five minutes the wind blew at the rate of thirty miles per hour. The storm which occurred on the 29th is reported to have caused considerable damage to the corn crop in Alexander county.

Carmi, White county: a severe wind and rain storm occurred on the morning of the 29th. Several buildings were damaged and the corn crop throughout this county was seriously injured. At the village of Centerville, eight miles north, much damage was done, and at Phillipstown a number of buildings were blown down.

Indiana.—Evansville, Vanderburg county: a violent storm visited this part of the Ohio valley on the morning of the 29th, during which the transfer steamer "Belmont," plying between Evansville, and Henderson, Kentucky, was capsized and sunk, when near Stanley's Landing. The storm struck the steamer when about five miles below Evansville, where she was capsized